Name: _____ Date: _____
Block: _____

**2012 – 2013 Geometry Midterm Review Packet**

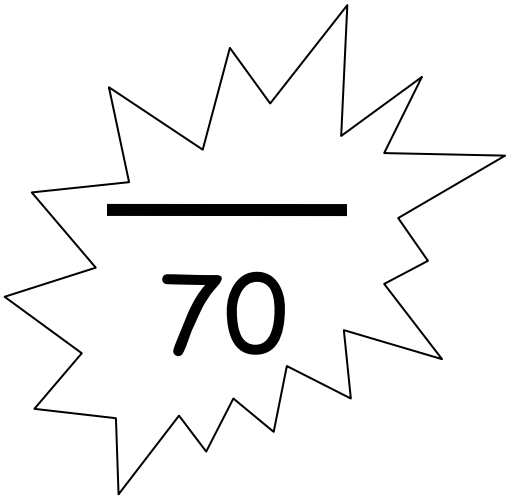
| | | |
|---|---|---|
| **Due:** | 1/7/13 | (for +5 on packet) |
| | **1/8/13** | **(for +3 on packet)** |
| | 1/9/13 | (for +2 on packet) |
| | **1/10/13** | **(A Day Classes)** |
| | 1/11/13 | (B Day Classes) |

The midterm will be on Chapters 1 through 4, Chapter 6 and material from Chapter 7 that we cover in class. The **BEST** way to study for the midterm will be to look over all past tests and quizzes because the following review packet covers most, but not all, topics covered! It will be graded and is worth a total of 70 points. The midterm review will be graded on:

Completion (20 points) – this includes the completion of each problem by the due date and showing adequate work.
Accuracy (50 points) - the problems are worked out and solved correctly.
Bonus points will be given if the review packet is turned in early (on the 7th, 8th, 9th). The number of bonus points you receive depends on the day you turn it in and only if the review packet is FULLY complete.

**You must show all of your work if you want full credit for the completion points.** This must be done in pencil; no pen!! PUT ALL ANSWERS ON THE ANSWER SHEET PROVIDED!!! No late papers will be accepted!! No exceptions!! This packet and the answer sheet must be turned in together.

**GOOD LUCK!!!**

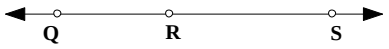


**Chapter 1: Essentials of Geometry**

**For questions #1 – 5, match the symbolic notation with its correct meaning.**

| | | | |
|---|---|---|---|
| 1._____ | $\overleftrightarrow{AB}$ | A. | line segment $AB$ |
| 2._____ | $\overrightarrow{AB}$ | B. | distance of $AB$ |
| 3._____ | $\overline{AB}$ | C. | ray $AB$ |
| 4._____ | $AB$ | D. | congruent to |
| 5._____ | $\cong$ | E. | line $AB$ |

6. If $RS = 46.2$ and $QS = 83.7$, find $QR$.




7. Use the Segment Addition Postulate to solve for $p$.

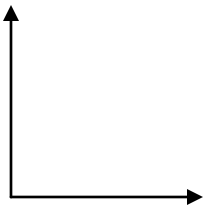
$FE = 5p - 6$
$EG = 3p + 20$
$FG = 110$

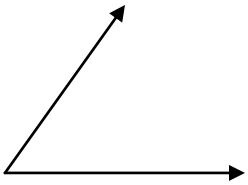

8. Find the distance between $A(-6, 0)$ and $B(-4, 4)$. Leave your answer in radical form.

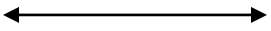
9. Find the midpoint of $A(-6, 0)$ and $B(-4, 4)$.

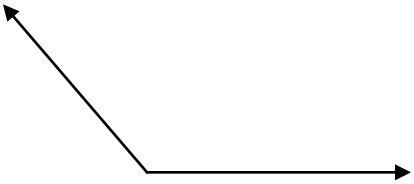
10. $M$ is the midpoint of segment $AB$. Given the coordinates of $A(2, -4)$ and $M(4, 6)$, find the coordinates of $B$.

11. Which of the following angles measures 125°?

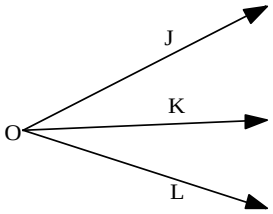
A] 

B] 

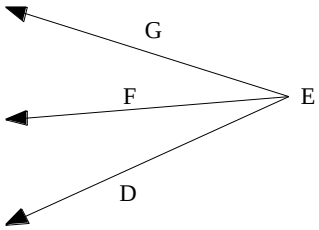
C] 

D] 

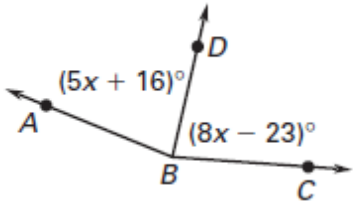
12. If $m\angle JOL = 60°$ and $m\angle KOL = 37°$, then what is the measure of $\angle JOK$?




13. Given that $m\angle GED = 61°$, $m\angle GEF = 3x + 8$ and $m\angle DEF = 8x - 2$, find $m\angle DEF$.

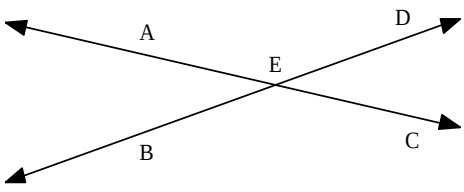



14. In the diagram, $\overrightarrow{BD}$ bisects $\angle ABC$. Find $m\angle ABC$.



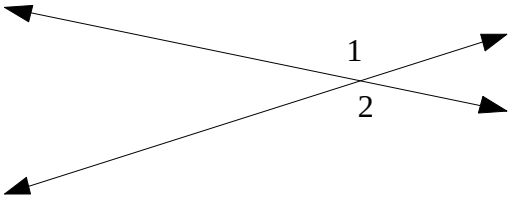

15. In the figure below, $m\angle AED = 128°$. Which of the following statements is false?

A] $m\angle BEC = 128°$
B] $\angle AEB$ and $\angle DEC$ are congruent
C] $\angle BEC$ and $\angle CED$ are vertical angles
D] $m\angle AEB = 52°$



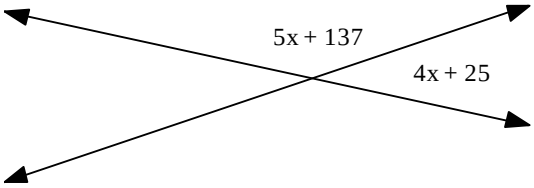
16. A _____ of angles is formed when the non-shared sides of two adjacent angles form a pair of opposite rays.

17. $\angle 1$ and $\angle 2$ are what type of angles?

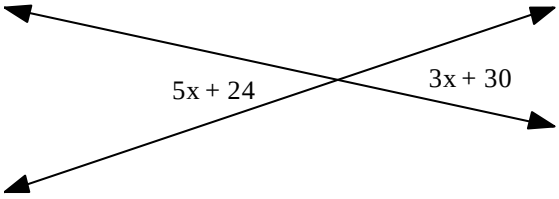



18. $\angle 1$ and $\angle 2$ are supplementary angles and $\angle 1$ and $\angle 3$ are vertical angles. If $m\angle 2 = 72°$, find $m\angle 3$.

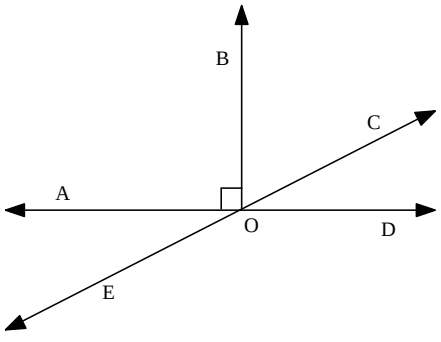
19. Solve for $x$.




20. Solve for $x$.




**For questions #21 – 23, use the diagram to the right.**

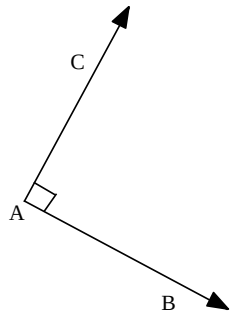



21. Name all angles that are adjacent to $\angle BOC$.

22. Name an angle that is complementary to $\angle COD$.

23. Name an angle that is supplementary to $\angle EOA$.

24. The figure at right represents which of the following statements?




A] two perpendicular rays

B] two perpendicular lines

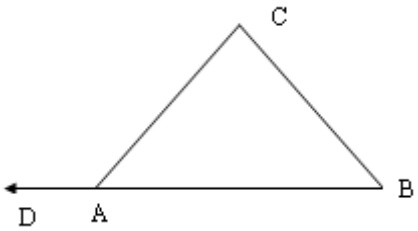
C] a straight angle

D] $AB = AC$

25. Which of the following statements is false?

A] Three non-collinear points determine a plane.
B] Any three points lie on a distinct line.
C] A line contains at least two points.
D] Through any two distinct points there exists exactly one line.

26. In the figure, $m\angle CAD$ is twice $m\angle CAB$. What is $m\angle CAB$?




## Chapter 2: Reasoning and Proof

27. Rewrite the statement in if-then form: "Vertical angles are congruent."

_____

28. What is the converse of the statement, "If it rains, then I carry my umbrella?"

_____

29. What is the inverse of the statement, "If two lines are parallel, then they do not intersect?"

_____

30. What is the contrapositive of the statement, "If I like school, then I attend every day?"

_____

31. "If I get a chance, then I will succeed." In this conditional statement, the underlined portion is called what? The double underlined portion is called what?

Underlined = _____ Double underlined = _____

32. State a counter-example to the following statement: "If $x^2 = 25$, then $x = 5$."

_____

**For questions #33 – 38, decide if a conclusion can be reached. If so, write the conclusion. If a conclusion cannot be reached, then state INVALID.**

33. If you get a hit, then your baseball team will win. You hit a home run.

_____

34. If it is July 4th, then we will have a picnic. If we have a picnic, then we will have fireworks.

_____

35. All Redskins fans are energetic. Dave is energetic.

_____

36. $\sim t \rightarrow p$
$\sim p$
_____

37. $r \rightarrow q$
$q \rightarrow s$
_____

38. $p \rightarrow f$
$f$
_____

39. Let $a$ represent "$x$ is an odd number".
Let $b$ represent "$x$ is a multiple of 3".

If $x = 7$, which of the following is true? (The $\wedge$ symbol means "and".)

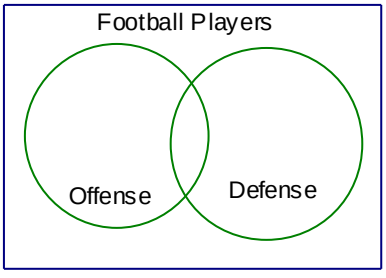
A] $a \wedge b$

B] $a \wedge \sim b$

C] $\sim a \wedge b$

D] $\sim a \wedge \sim b$

40. According to the Venn diagram, which is true?




A] All football players play offense and defense.

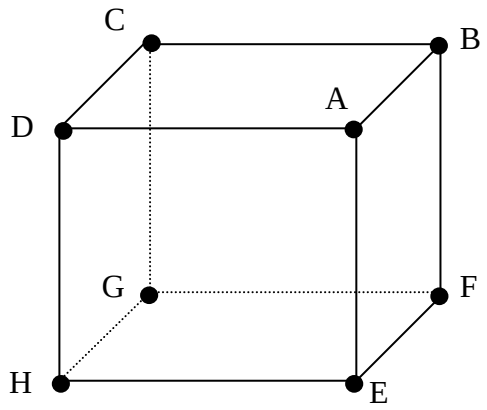
B] No football players play offense and defense.

C] All football players play defense.

D] Some football players play offense and defense.

**Chapter 3: Parallel and Perpendicular Lines**

**For questions #41 – 43, use the diagram below to state whether the following lines are parallel, perpendicular or skew.**

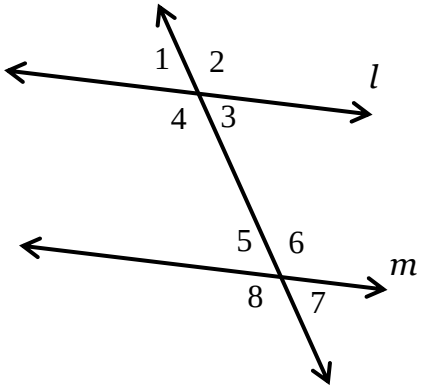



41. $\overleftrightarrow{CD}$ and $\overleftrightarrow{FE}$ are _____

42. $\overleftrightarrow{GF}$ and $\overleftrightarrow{GH}$ are _____

43. $\overleftrightarrow{AB}$ and $\overleftrightarrow{HE}$ are _____

**For questions #44 – 48, line *l* and line *m* are parallel in the diagram below. Match each statement with its correct postulate or theorem.**




_____ 44. $\angle 2 \cong \angle 8$

_____ 45. $\angle 4 \cong \angle 6$

_____ 46. $\angle 2 \cong \angle 6$

_____ 47. $\angle 4$ supp $\angle 5$

_____ 48. $\angle 2$ supp $\angle 7$

A. Alternate interior ∠s

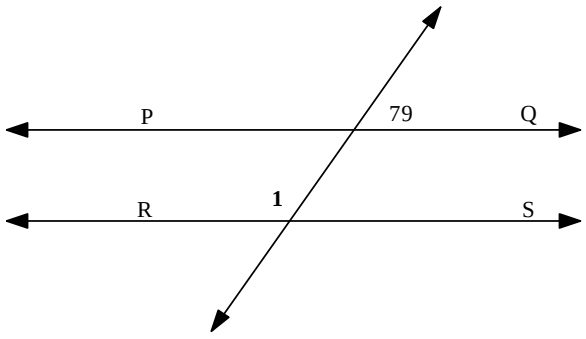
B. Corresponding ∠s

C. Consecutive exterior ∠s

D. Consecutive interior ∠s

E. Alternate exterior ∠s

49. Find $m\angle 1$, given that $\overleftrightarrow{PQ} \parallel \overleftrightarrow{RS}$.



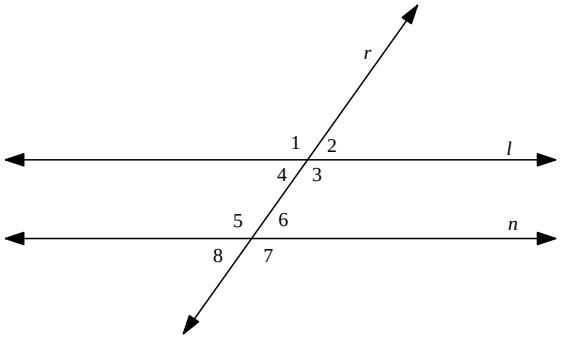
50. In the figure, $l \,//\, n$ and $r$ is a transversal. Which of the following is not necessarily true?

A] $\angle 2 \cong \angle 6$

B] $\angle 8 \cong \angle 2$

C] $\angle 7 \cong \angle 4$

D] $\angle 5 \cong \angle 3$



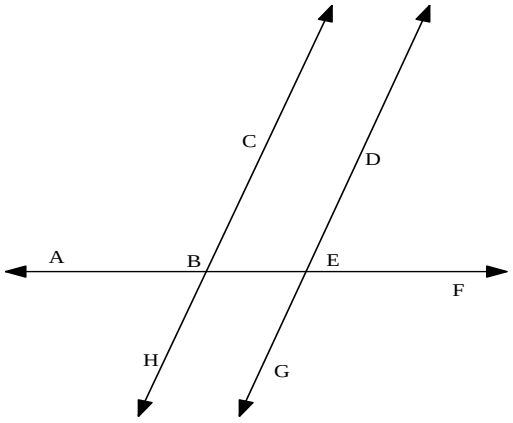

51. In the figure shown, $\overleftrightarrow{HC} \,//\, \overleftrightarrow{GD}$ and $m\angle ABC = 108°$. Which of the following statements is false?

A] $m\angle DEF = 72°$

B] $\angle ABH$ and $\angle AEG$ are alternate exterior angles

C] $\angle HBF$ and $\angle AED$ are alternate interior angles

D] $m\angle GEF = 108°$




52. Find the slope of the line passing through the points (1, –6) and (–6, –5).

53. Find the equation of a line which contains the point (2, 5) and is parallel to the line $y = 3x + 5$.

54. Find the equation of a line which contains the point (4, -5) and is perpendicular to the line $y = 2x + 3$.

55. Are the following two lines parallel, perpendicular or neither:?

$-7x + 6y = 4$ and $6x + 7y = 0$?

56. Line $m$ contains points (1, –3) and (2, 2). Which of the following pairs of points define a line parallel to $m$?

A] (0, 0) and (–1, 1)

B] (0, 0) and (1, 5)

C] (1, 1) and (6, 2)

D] (–4, 0) and (5, 5)

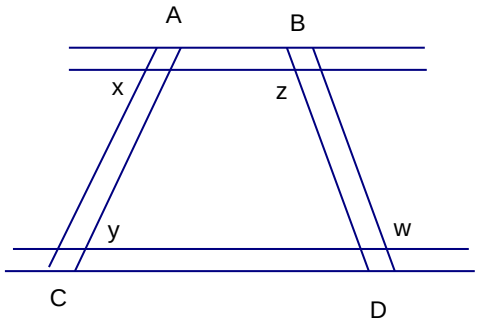
57. A construction worker needs to make sure a ceiling beam is parallel to its corresponding floor beam. Using the drawing as a guide, which pair of measurements is sufficient to show the beam are parallel?

A] $x = z$

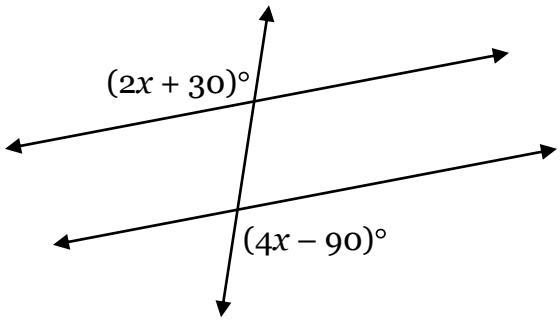
B] $y = w$

C] $x = y$

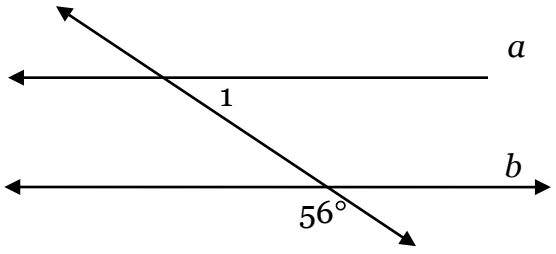
D] $y = z$



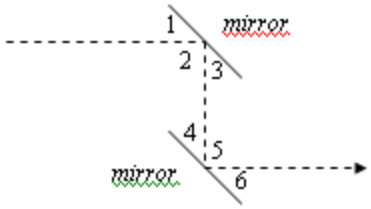

58. What value of $x$ will make lines $l$ and $m$ parallel?



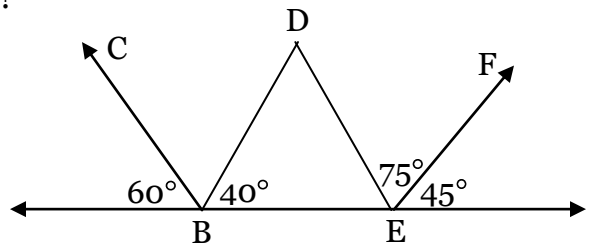

59. If line $a$ is parallel to line $b$, what is $m\angle 1$?



60. This diagram shows how a periscope works. If the two mirrors are parallel and $m\angle 1 = m\angle 3$, what is $m\angle 6$ when $m\angle 2 = m\angle 5 = 90°$?



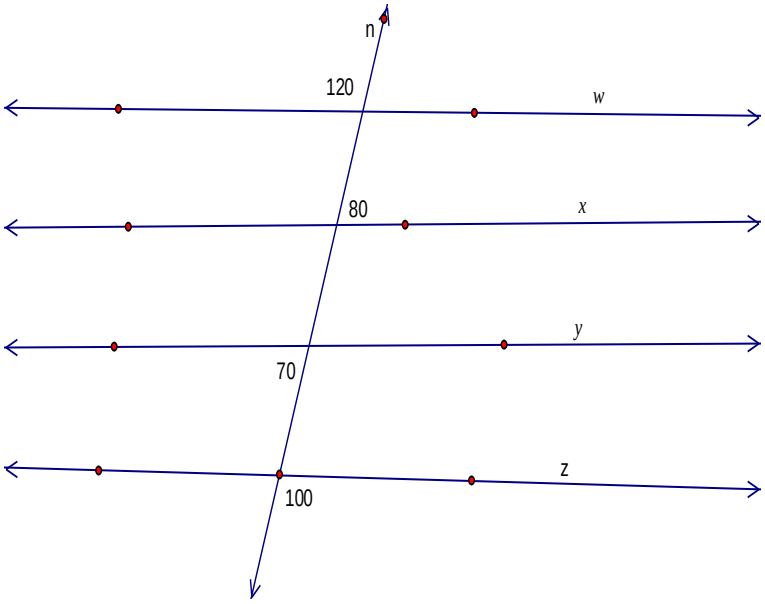

61. Using the information from the diagram, which is true?




A] $\overline{BD} \parallel \overline{EF}$ B] $\overline{BD} \parallel \overline{DE}$

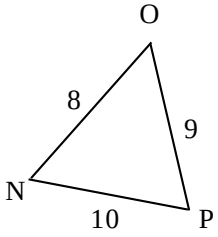
C] $\overline{CB} \parallel \overline{BD}$ D] $\overline{CB} \parallel \overline{DE}$

62. Line $l$ intersects lines $w$, $x$, $y$, and $z$. Which two lines are parallel?

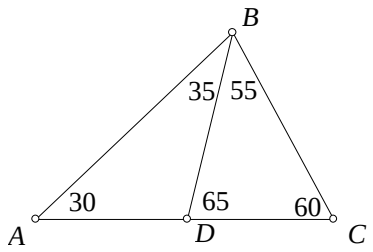



## Chapter 4: Congruent Triangles

63. Classify $\Delta NOP$ by its sides.



64. Name an obtuse triangle in the diagram below.

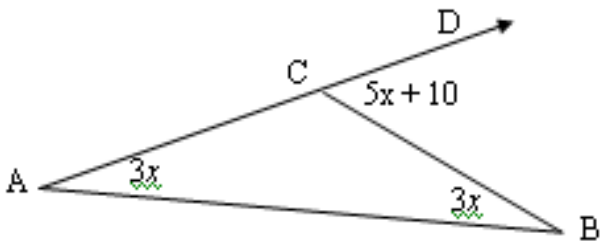



65. A triangle has angle measures of 60°, 60°, and 60°. Classify the triangle by its angles and sides.

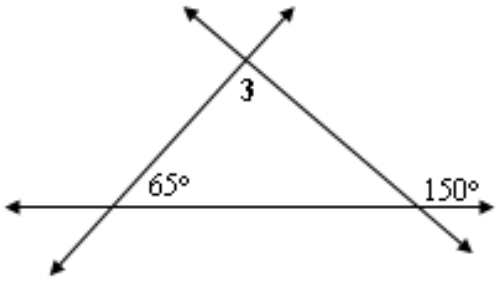
Angle = _____ Sides = _____

66. How many obtuse angles can a triangle have?

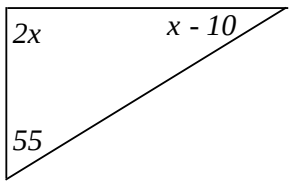
67. The figure has angle measures as shown. What is $m\angle BCD$?



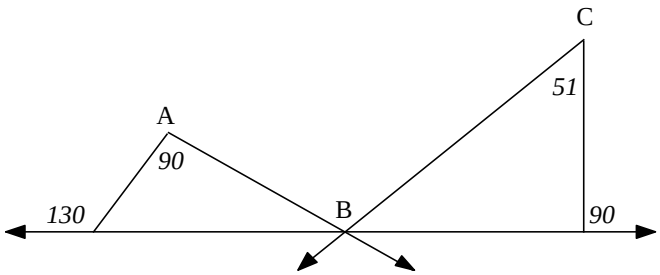

68. What is $m\angle 3$?



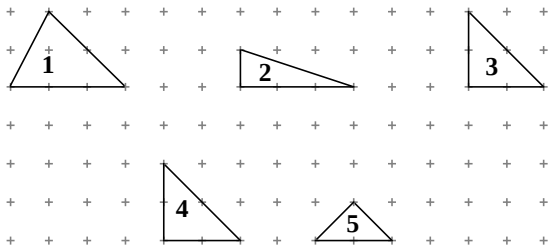

69. Solve for $x$.



70. Find the measure of $\angle ABC$.




71. Which figures appear to be congruent?

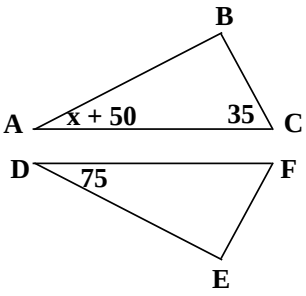



72. If $\Delta ABC \cong \Delta XYZ$, then $AC \cong$ _____.

73. If $\Delta ABC \cong \Delta DEF$, $AB = 10$ feet, $m\angle B = 59°$, and $m\angle F = 21°$, which of the following statements is false?

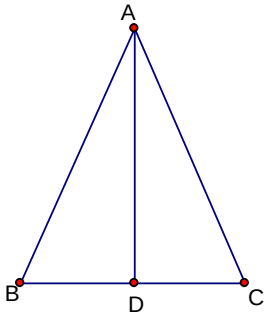
A] $AC = DF$
B] $BC = EF$
C] $m\angle D = 100°$
D] $\angle B \cong \angle D$

74. In the diagram, $\angle B \cong \angle E$ and $\angle C \cong \angle F$. Find the value of $x$.

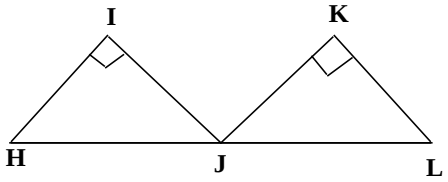



75. Which of the following statements must be true, if $AD \perp BC$ and $AB = AC$?

A] $\Delta ABD \cong \Delta ACD$ by SSS
B] $\Delta ABD \cong \Delta ACD$ by SAS
C] $\Delta ABD \cong \Delta ACD$ by HL
D] There are no congruent triangles

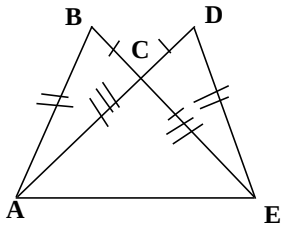


76. If $HI = JK$ and $IJ = LK$, prove the two triangles congruent and state the method.

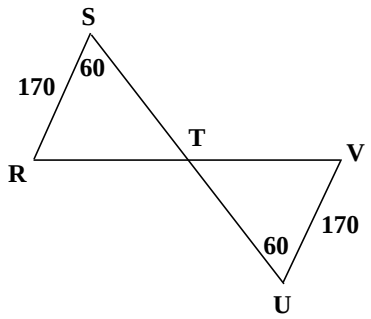



77. Given: $\angle B \cong \angle E$ and $\angle C \cong \angle F$. What other piece of information is needed to show that $\Delta ABC \cong \Delta DEF$ by ASA? Hint: Draw a diagram!

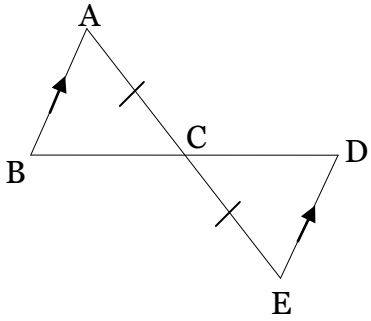
78. Refer to the figure below. $\Delta ABC \cong$ _____



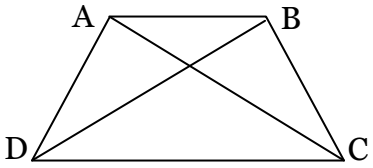

79. Which postulate or theorem can be used to prove that $\Delta RST \cong \Delta VUT$?



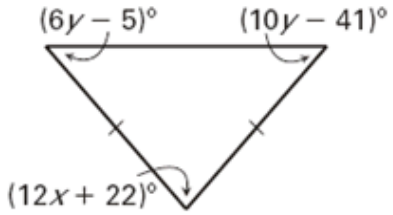

80. Which postulate or theorem can be used to prove that $\Delta ABC \cong \Delta EDC$?



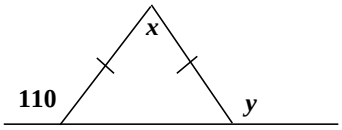

81. Given that $\overline{AD} \cong \overline{BC}$ and $\overline{AC} \cong \overline{BD}$, which postulate could be used to prove that $\Delta DCA \cong \Delta CDB$?



82. Find the value of $x$ and $y$.

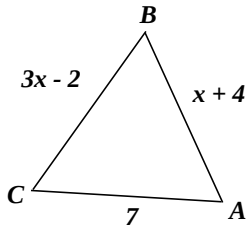



83. Find the values of $x$ and $y$.




84. In $\Delta ABC$, $\overline{AB} \cong \overline{CB}$, which term does not describe the triangle?

A] Equilateral
B] Isosceles
C] Acute
D] Obtuse




***DON'T FORGET TO REVIEW YOUR CONGRUENT TRIANGLES PROOFS TOOLBOX!!***

**Chapter 6: Similarity**

85. Solve for $a$: $\frac{10}{a+2} = \frac{5}{a-2}$

86. At the same time of day, a man who is 75 inches tall casts a 52.5-inch shadow and his son casts a 35-inch shadow. Determine the height of the man's son.

**For questions #87 – 89, identify the similarity postulate or theorem used to prove that $\Delta ABC \sim \Delta XYZ$. Sketch pictures if necessary. Also, state the scale factor for 87 and 89.**

87. The side lengths of $\Delta ABC$ are 3, 4, 6, and the side lengths of $\Delta XYZ$ are 9, 12, 18.

88. In $\Delta ABC$, $m\angle A = 15°$ and $m\angle B = 80°$. In $\Delta XYZ$, $m\angle Y = 80°$ and $m\angle Z = 85°$.

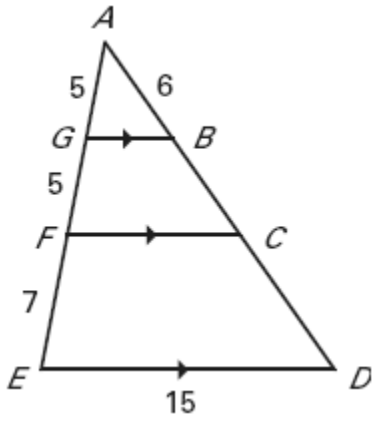
89. In $\Delta ABC$, $m\angle B = 60°$ and $AB = 6$, and $BC = 12$. In $\Delta XYZ$, $m\angle Y = 60°$ and $XY = 12$, and $YZ = 24$.

**For questions #90 – 93, use the diagram to the right. Please round answers to nearest tenth.**

90. Length of *GB*.

91. Length of *FC*.

92. Length of *BC*.




93. Length of *CD*.

## Chapter 7: Right Triangles and Trigonometry

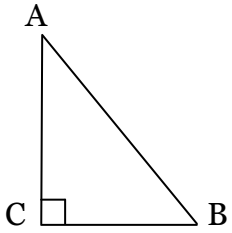
94. $\Delta ABC$ is a right triangle with right angle at *C*. Which are the possible measures of $\angle A$ and $\angle B$?

A] 48° and 50°

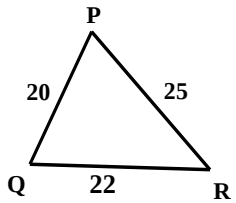
B] 38° and 32°

C] 52° and 38°

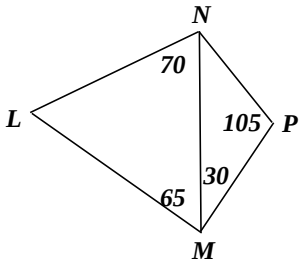
D] 52° and 128°




95. Arrange the angles of the triangle in order, from largest to smallest.

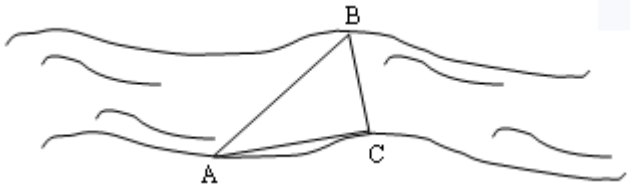


96. The longest side in the figure is _____.




97. Two sides of a triangle have lengths 12 and 27. The length of the third side must be greater than _____ and less then _____.

98. On the shores of a river, surveyors marked locations *A*, *B*, and *C*. $m\angle ACB = 70°$ and $m\angle ABC = 65°$. List the distances between these locations in order, least to greatest?




99. Which of the following could be the sides of $\Delta ABC$?

A] $AB = 12$, $BC = 15$ and $AC = 2$

B] $AB = 9$, $BC = 15$, $AC = 4$

C] $AB = 150$, $BC = 100$, $AC = 50$

D] $AB = 10$, $BC = 8$, $AC = 12$

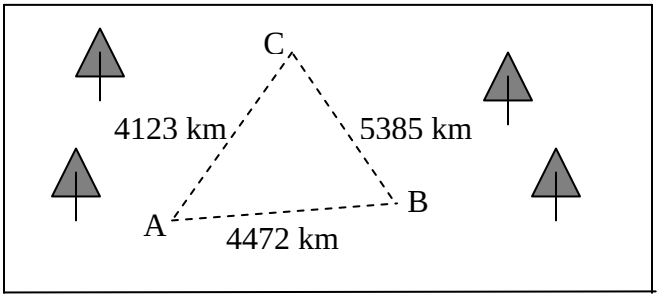
100. Three lookout towers are located at points *A*, *B*, and *C* on a section of the national forest shown in the diagram. Which of the following is true concerning $\Delta ABC$ formed by the towers?

A] $m\angle A$ is greatest

B] $m\angle C$ is greatest

C] $m\angle A$ is least

D] $m\angle C$ is least



# Geometry Midterm Review Answer Sheet

**Name:** _____

**Block:** _____

1. _____
2. _____
3. _____
4. _____
5. _____
6. QR = _____
7. p = _____
8. AB = _____
9. (  ,  )
10. (  ,  )
11. _____
12. m∠JOK = _____
13. m∠DEF = _____
14. m∠ABC = _____
15. _____
16. _____
17. _____
18. m∠3 = _____
19. x = _____
20. x = _____
21. 
22. _____
23. _____
24. _____
25. _____
26. m∠CAB = _____
27. 
28. 
29. 
30. 
31. _____
    _____
32. 
33. 
34. 
35. 
36. 
37. 
38. 
39. _____
40. _____
41. _____
42. _____
43. _____
44. _____
45. _____
46. _____
47. _____
48. _____
49. m∠1 = _____
50. _____

51. _____

52. m = _____

53.

54.

55. _____

56. _____

57. _____

58. x = _____

59. m∠1 = _____

60. m∠6 = _____

61. _____

62. ____//_____

63. _____

64. _____

65. _____

_____

66. _____

67. m∠BCD = _____

68. m∠3 = _____

69. x = _____

70. m∠ABC = _____

71.

72. $\overline{AC}$ ≅ _____

73. _____

74. x = _____

75. _____

76. _____

77. _____ ≅ _____

78. ΔABC ≅_____

79. _____

80. _____

81. _____

82. x = _____

y = _____

83. x = _____

y = _____

84. _____

85. a = _____

86. h = _____

87. _____, scale factor = _____

88. _____

89. _____, scale factor = _____

90. GB = _____

91. FC = _____

92. BC = _____

93. CD = _____

94. _____

95.

96. _____

97. Greater than _____ and less than _____

98.

99. _____

100. _____